

Abstract of the Invention

A Ta barrier slurry for Chemical-Mechanical Polishing (CMP) during copper metallization contains an organic additive which suppresses formation of precipitates and copper staining. The organic additive is chosen from a class of compounds which form multiple strong adsorbant bonds to the surface of silica or copper, which provide a high degree of surface coverage onto the reactive species, thereby occupying potential reaction sites, and which are sized to sterically hinder the collisions between two reactant molecules which result in new bond formation. The organic additive-containing slurry can be utilized throughout the entire polish time. Alternatively, a slurry not containing the organic additive can be utilized for a first portion of the polish, and a slurry containing the organic additive or a polishing solution containing the organic additive can be utilized for a second portion of the polish.

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